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A New Species of *Adenophora* (Campanulaceae) from Japan

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A new species of *Adenophora, A. izuensis*, is described. This has been collected in seven localities in the south part of the Peninsula Izu, central Honshu, Japan. Having a number of intermediate features this is considered to be a species derived from a hybrid between *A. remotifolia* and *A. triphylla* var. *japonica.*

The genus *Adenophora*, ranging from Europe to east Asia and consisting of about 40 species, is represented by 12 species in Japan (Okazaki 1993). A new species has been found in seven different localities in the southern part in the Peninsula Izu, Shizuoka Prefecture, central Honshu, Japan. This has a considerable number of intermediate features between *A. triphylla* (Thunb. in Murray) DC. and *A. remotifolia* (Siebold & Zucc.) Miq. It differs from the former in having alternate inflorescence-branches with 1 to 3 flowers and funnel-shaped corollas with clavate stigmas, and from the latter by the sessile, elliptic to narrowly elliptic leaves as well as the linear or linear-filiform calyx lobes, tubular disc, and exserted stigmas.

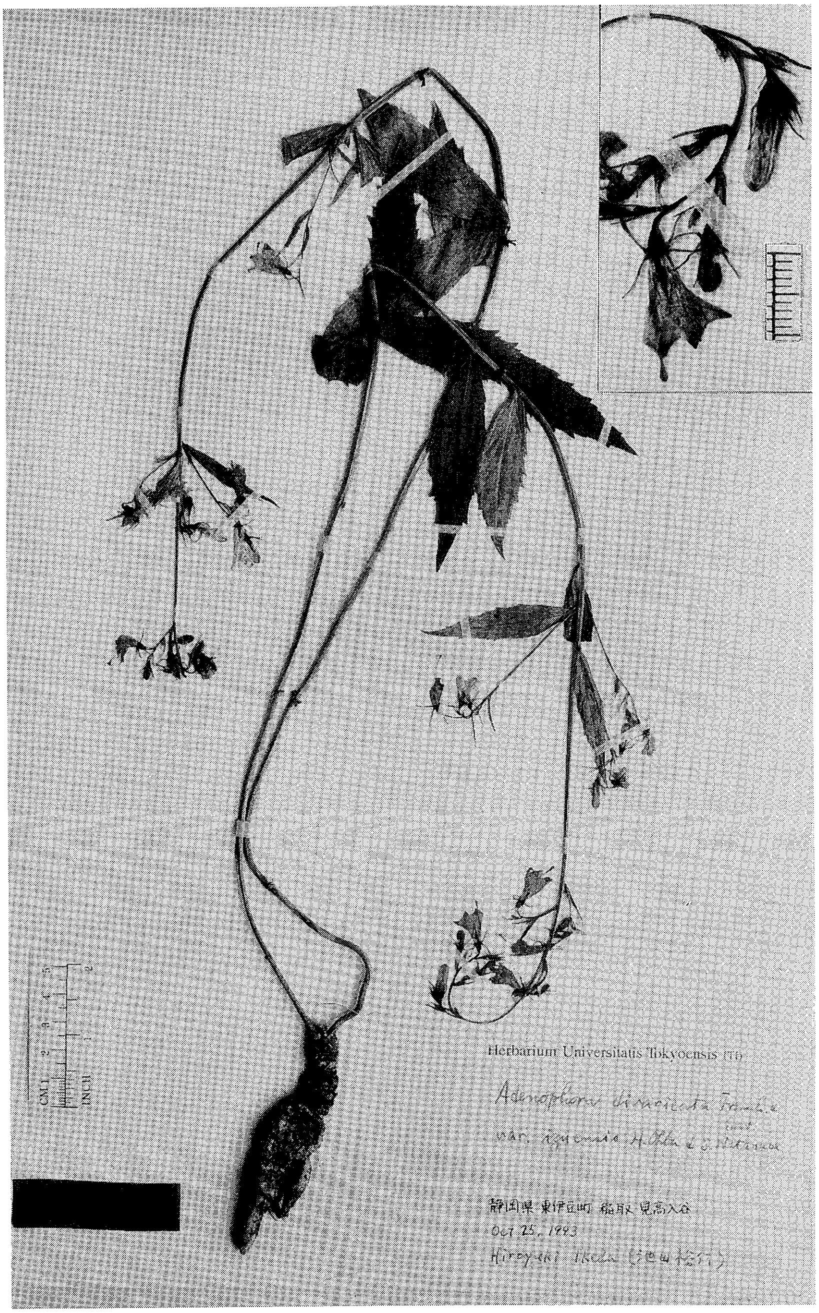
From resembling *A. divaricata* Franch. & Sav. it differs by the linear or linear-filiform and more or less denticulate (against lanceolate and entire) calyx lobes and funnel-shaped corollas. *Adenophora sinensis* A.DC., distributed in central and east China, is also similar to this, but differs in having alternate leaves (sometimes petiolate), globose calyx, campanulate corollas, short tubular disc, and gradually extending stigmas.

It is remarkable that the pollen stainability of the novelty is between 44.3% and 83.9% (65.2% in average) and is relatively low. From the relatively low stainability the authors are considered that this is derived from a hybrid between *A. triphylla* var. *japonica* (Regel) H. Hara and *A. remotifolia*. The presence of mosaic and intermediate characters between the two species supports this view. No hybrid between them has been reported, though both species are distributed throughout Honshu, Shikoku and Kyushu, and occur on river banks, grassland, margin of forests in lowland. It is remarkable that *A. triphylla* var. *japonica* is rather common but *A. remotifolia* has not been found in the Peninsula Izu (Sugimoto 1984).

Fedorov (1957) classified the genus *Adenophora* into two sections; Adenophora and Microdiscus. *Adenophora triphylla* belongs to sect. Adenophora, while *A. remotifolia* to sect. Microdiscus. If the parentage assumption is correct, this is the first record of intersectional hybrid in *Adenophora.* In spite of the isolated systematic status of the parents, it seems to have functional pistils and may reproduce sexually. The sexual reproduction is supported by the sporadic occurrence and relatively wide range of variations in the shape and size of leaves and the height of stem.

Adenophora izuensis H.Ohba & S.Watanabe, sp. nov. [Fig. 1]

Species inter *Adenophora remotifolia* (Siebold & Zucc.) Miq. et *A. triphylla* (Thunb. in Murray) DC. var. *japonica* (Regel) H. Hara, quasi intermedia ex hybridatione harum specierum orta. Ab illa foliis caulinis 3- vel 4-natis (supra alternis) sessilibus modece vel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Oct 25, 1993

Fig. 1. Type of *Adenophora izuensis* H.Ohba & S.Watanabe.

anguste ellipticis, calyce lobis linearibus vel lineari-filiformibus (nec anguste oblongis nec integris), disco tubulari; ab hac inflorescentiae axibus lateralibus alternis nec verticillatis, 1 vel 3 floriferis, corolla infundibuliformi et stylo exserto bene differt.

Stems 40–60 cm long, glabrous. Leaves 3- or 4-whorled in lower part and alternate in upper part, sessile, elliptic or narrowly elliptic, base widely attenuate to cuneate, apex acuminate or triangular, margin serrate, 5–8 cm long, 2–2.5 cm wide, glabrous. Inflorescences terminal, bracteate, lower bracts (narrowly elliptic or elliptic, 3–5 cm long) larger than those in upper part (linear); branches alternate with one to three flowers in a linear bracteolate raceme.

Flowers 1.5–1.8 cm long. Calyx tube 2.5–3 mm long; lobes linear to linear-filiform, 6–7 mm long, sparsely denticulate. Corolla funnel-shaped, bluish, 1.3–1.7 cm long, 1.5-1.7 cm wide. Stamens 10–11 mm long, included; anthers linear, ca. 4 mm long; filaments subulate, margin densely ciliate. Disc tubular, ca. 4 mm long, deep yellow. Styles exserted, stigmas clavate, ca. 5 mm long; styles filiform, minutely papillate.

Type: Japan. Honshu. Izu Peninsula [Shizuoka Prefecture], Higashi Izu-machi, Inatori, Mitaka-iriguchi. Hiroyuki Ikeda s.n. on 25 Oct. 1993 (TI).

Paratype: Japan. Honshu. Izu Peninsula [Shizuoka Prefecture], Higashi Izu-machi, Aono. Ikeda s.n. 21 Oct. 1993 (TI); Shimo-ono. Ikeda s.n. 22 Oct. 1993 (TI); Yumigahama. Ikeda s.n. 24 Oct. 1993 (TI); Kawazu-machi, Kamisagano. Ikeda s.n. 25 Oct. 1993 (TI); Shimoda-shi, Matsuzaki-machi, Kumomi. Ikeda s.n. 25 Oct. 1993 (TI); Kazono. Ikeda s.n. 25 Oct. 1993 (TI).

Adenophora izuensis flowers in late October to early November, and it is 3 to 4 weeks later than *A. triphylla* in the flowering period.

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大場秀章[a]・渡邊定元[b]：伊豆半島で見いだされたツリガネニンジン属の一新種

伊豆半島の植物相はよく調べられており，杉本 (1984) の静岡県植物誌にもその成果が反映している．1993年10月に半島南部の7地点で見慣れないツリガネニンジン属植物が開花しているのが見いだされた．邦産ツリガネニンジン属は英文版日本植物誌（1993）で岡崎純子により纏められているが，この植物はどの種とも合致しないものであった．

はじめフクシマシャジンに関連する1型との疑いをもったが，フクシマシャジンは狭筒形の花冠や披針形の蕚裂片をもち，漏斗状花冠と線形あるいは糸状線形の蕚裂片をもつ本植物とは異なる．

次に，伊豆半島ではソバナは見いだされていないが，この植物がツリガネニンジンとソバナを特徴付ける形質を一部もつことから，両種間の自然雑種かと考えてみた．すなわち，線形または糸状線形の蕚裂片は花冠より抽出する雌蕊をもつこと，及び花冠の大きさではツリガネニンジンに一致し，棍棒状の柱頭と漏斗状花冠をもつ点ではソバナに一致する．ただし，この属の分類上重要な花盤の形質はフクシマシャジンのそれに類似する．その他の形質も合わせて，この植物が両種間の雑種に由来するとすれば，ツリガネニンジンとソバナを特徴付ける形態形質がモザイク的に現れ

ているということができる．さらに，花粉の染色率を調べたところ44.3%から83.9%（平均65.2%）で通常の植物よりはかなり低く，雑種由来の可能性も示唆するものであった．

結論としてツリガネニンジンとソバナの自然雑種に由来する可能性が高い未知の新種として記載することにした．なお，ツリガネニンジンとは，1から3花をつけた花序枝を互生すること，棍棒状の柱頭と漏斗状花冠をもつ点で，ソバナからは葉が楕円形または狭楕円形で，無柄であること，前述した萼裂片のかたち，筒状の花盤，及び柱頭が花冠から抽出する点などが大きく異なる．

ところで，これまでこのような特徴ある植物が見逃されていたのはなぜだろう．その理由はわからないが，最近になって急速に広がったことも考えられる．

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